

## Algiers community microgrids

Algeria heavily depends on natural gas and oil to meet its energy needs and exports mainly to Europe. However, the country also has significant renewable energy potential, particularly in solar and wind energy. Algeria is committed to advancing renewable energy and seeks to reach 15,000 MW of power generation capacity based on renewable resources by 2035 in order to meet rising demand for energy and maximize cost-effectiveness.

Algeria is the largest country in Africa. Its 2,381,740 square kilometers of land that can be divided into three main geographical zones: the northern part that borders the Mediterranean Sea, the high plains (a semi-arid zone), and the Sahara Desert, which covers 80 percent of its surface and contains major fossil energy sources. Algeria depends heavily on natural gas and oil to meet its own energy and generates foreign exchange by exporting them mainly to Europe.

Besides its vast fossil fuel resources, Algeria has a significant renewable energy potential, particularly in solar and wind energy. Today, the country is committed to the development of renewables and is prepared to exploit these resources and take on the challenge of a successful energy transition. Between solar, wind, geothermal, and biomass, Algeria clearly has several options to diversify its energy mix and ensure energy security.

To provide sustainable solutions to the country's dependence on hydrocarbons, solar energy is the main option. Algeria has one of the highest solar potential in the world, with about 2,000 to 3,900 hours of sunshine per year and a daily irradiation of 3,000 to 6,000 Wh/m<sup>2</sup>.

Algeria's potential for solar energy is estimated at around 1,700 kWh/m<sup>2</sup> of solar energy per year. Investing in solar energy is a necessity for Algeria, which plans to install 15,000 megawatts (MW) of photovoltaic solar energy by 2035.

Concentrated thermodynamic solar energy can also play a significant role and 2,000 MW are planned to be built by 2030. Many wilayas (Algerian states) are suitable, meteorologically speaking, to be the focus of these installations. Sonatrach, the state-owned oil and gas company, plans to install 1.3 gigawatts (GW) of solar capacity country-wide mainly to cover electricity needs.

The wind resource varies from region to region. The different maps established by the Algerian research center (CDER) show several regions (mainly located in the south of the national territory, such as Adrar, Tamanrasset, Djanet, and Salah) where the high winds are found.

Adrar has had 10 MW of wind capacity installed since 2014. In order to achieve their wind energy goals between 2016 and 2030, a branch of Sonelgaz, the state gas and power firm, had plans to conduct studies to identify suitable locations for wind power in 21 designated areas throughout the country. However, the

production of electricity from the wind source has equaled only 0.01%.

The energy derived from biomass (from the combustion of organic waste) is also exploited but on a small scale. Between biochemistry and thermochemistry, Algeria intends to push the development of energy from waste by generating 1,000 MW by 2030.

Thermal springs provide heat for greenhouses and buildings including hotels and traditional bathhouses (known as Hammans). Over 240 hot springs have been documented in the northern part of the country, with approximately one third of them having temperatures exceeding 45°C.

Geothermal energy also has the potential to be utilized for electricity generation. Notably, in Biskra, there exist high temperature hot springs that can reach up to 118°C. The installation of 15 MW is scheduled for the next decade.

While the availability of oil and gas in Algeria currently substantial, the demand for energy continues to increase and non-renewable resources, according to several scenarios, may start to run out in the near future.

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